

CLAIMS

1. A wireless controller (1) for controlling and/or monitoring and a device (15) arranged relative an industrial robot (16), **characterised** by comprising wireless communication means
- 5 including a processor (6) arranged with communication function means (10) for handling wireless communication to and from said device and control means (3) for carrying out at least one control function for one or more actuators of said device.
- 10 2. A wireless controller according to claim 1, **characterised** in that the control means (3) are comprised in part as one or more computer programs executable by means of said processor that handles the wireless communication functions.
- 15 3. A wireless controller according to claim 1, **characterised** in that the control means (3) is further arranged to process a signal from at least one sensor arranged with said device.
4. A wireless controller according to any of claims 1-3, **characterised** in that it comprises a configurable hardware I/O
- 20 interface (9).
5. A wireless controller according to claim 4, **characterised** in that the hardware input/output means (9) of the wireless
- 25 controller are integrated in the same unit as said processor.
6. A wireless controller according to claim 1, **characterised** in that the control means (3) further comprises program means for receiving and/or storing operational data of said device.
- 30 7. A wireless controller according to claim 6, **characterised** in that the wireless controller comprises memory means (7) for storage of operational data.

8. A wireless controller according to claim 6, characterised in that the control means further comprises computer program means (3, 22) for processing the operational data of said device.

5 9. A wireless controller according to claim 6, characterised in that the control means further comprises output means for communicating data dependent on the stored operational data to a display means.

10 10. A wireless controller according to claim 6, characterised in that the output means for communicating the stored operational data comprises an embedded web server.

11. A wireless controller according to claim 9, characterised in
15 that the output means of the control means is configured to communicate the stored operational data via the wireless communication means (10, 11).

12. A wireless controller according to claim 9, characterised in
20 that the output means of the control means may be configured to communicate with a supervisory robot control system using a message sent via any of the list of: SMS, a web address, a phone, a second robot control unit.

25 13. A wireless controller according to claim 9, characterised in that the output means of the control means is configured to send a communication to a human operator via any of a list of: SMS, a web address, a network address, a phone, a control unit.

30 14. A wireless controller according to claim 1, characterised in that the control means further comprises a control loop for receiving an input signal from a high level control system and generating a control signal to said device dependent on the input signal from the high level control system.

15. A wireless controller according to claim 14, **characterised** in that input/output signals of the control loop of the control means are compatible with a high level language.
- 5 16. A wireless controller according to claim 6, **characterised** in that the wireless controller comprises additional processor means (30) for receiving and/or storing operational data of said device (15).
- 10 17. A wireless controller according to claim 1, **characterised** by comprising wireless communication means (10, 11) configured to operate according to a standard compatible issued by the Bluetooth SIG Inc.
- 15 18. A wireless controller according to claim 17, **characterised** in that wireless communication functions means (10) comprises protocol stack handling for both incoming and outgoing communications.
- 20 19. A wireless controller according to claim 17, **characterised** by handling wireless communication transmitted according to a protocol that emulates a serial transmission line.
- 25 20. A wireless controller according to claim 1, **characterised** by means (19, 1, 10, 3) for providing wireless I/O functions between the robot control unit (18) and said device (15) arranged on or in relative proximity to the industrial robot (16).
- 30 21. A method for wireless control and/or monitoring of a device (15) arranged relative an industrial robot (16), **characterised** by:
-sending a wireless signal (44) from a robot control unit (18) to said device mounted on or arranged in conjunction with said robot,

-receiving the signal by means of a wireless controller (1) arranged mounted on or in conjunction with said device (15),
-processing the wireless signal in a processor (6) of the wireless controller,

5 -generating a second control signal (46) and sending it to said device (15).

22. A method according to claim 21, **characterised** by sending (47) the second control signal by means of a hardware I/O interface
10 (9) of the wireless controller (1).

23. A method according to any of claims 21-22, **characterised** by storing operational data for said device in a memory means (7) of the wireless controller.

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24. A method according to any of claims 21-23, **characterised** by storing in-signals and result signals sent out in a memory means (7) of the wireless controller.

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25. A method according to any of claims 21-24, **characterised** by processing operational data and providing for a web client or a thin client data comprising any from the list of: signals, results, number of complete cycles, cycle time, statistical information, alarms.

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26. A method according to any of claims 21-25, **characterised** by providing operational data for a display means (20).

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27. A method according to any of claims 21-25, **characterised** by providing diagnostic information based on the operational data.

28. A method according to claim 27, **characterised** by providing the diagnostic information arranged compatible with a web client or a thin client.

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29. A method according to claim 28, **characterised** by providing the diagnostic information arranged compatible with a web browser or telephone adapted web browser format including from the list of: XML, HTML, WML, WBXML.

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30. A method according to claim 27, **characterised** by providing the diagnostic information arranged compatible with a Java applet.

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31. A method according to any of claims 21-30, **characterised** by downloading operational information and/or configuration data stored in the wireless controller to a second wireless controller and/or second device neither of which are mounted on the robot.

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32. A method according to any of claims 20-21, **characterised** by providing wireless I/O functions between the robot control system (18) and the device (15) arranged on or in relative proximity to the industrial robot (16).

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33. Use of a device according to any of claims 1-20 to control and/or monitor a device (15) arranged with an industrial robot (16) to carry out the operation of any one from the list of: welding, soldering, riveting, painting, gluing, folding plate, bending plate, hemming plate, gripping an object, manipulating an

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object.

34. Use of a device according to any of claims 1-20 to configure and/or calibrate a second wireless controller and/or a second device prior till use with a robot.

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35. Use of a wireless controller according to any of claims 1-20 by a human operator to control and/or monitor a device (15) arranged with an industrial robot (16).

36. Use of a wireless controller according to any of claims 1-20 by means of a process running on one or more computers to supervise and/or control a device arranged with an industrial robot (16).

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37. A computer program comprising computer code means and/or software code portions for making a computer or processor perform the steps of a method according to any of claims 21-31.

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38. A computer program product according to claim 37 comprised in one or more computer readable media.

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39. A graphical user interface for controlling and/or monitoring and a device (15) arranged relative an industrial robot (16),
characterised in that a display for operational data of the device (15) is provided by a wireless controller (1) according to any of claims 1-20.

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40. A graphical user interface according to claim 39,
characterised in that the operational data values are provided by means of an embedded web server comprised in the control means (3) of the wireless controller.

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41. A graphical user interface according to claim 39,
characterised in that the operational data values displayed are combined with a graphical representation of a relevant production cell or part thereof.

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42. A graphical user interface according to claim 39,
characterised in that the operational data values displayed are arranged to be displayed upon activation of a part of the graphical representation of the relevant production cell or part thereof using a computer mouse, joystick, touch screen or similar computer display selection means.

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43. A wireless controller (1) for controlling and/or monitoring a device (15) arranged relative an industrial robot (16), characterised by comprising wireless communication means including a processor (6) arranged with

- 5 -communication function software means (10) for handling a wireless protocol stack for communication to and from said device, and
- control means (3) for carrying out at least one control function for one or more actuators of said device.